## October 1, 2009

### **Respirator Program Review**

# **Hazard Communication Program Review**

If the work can create a hazardous dust, mist, vapor or welding fume the following specific items need to be addressed:

# Written Respirator Program including (OSHA 1910.134)

- Identifying the Hazard-Airborne Toxic material
- —Air sampling records and plan for air sampling-SAMPLING BY AN Experienced Individual
  - A record of the sampling conducted while working at SSC is required to be submitted to NASA by all contractors
- -Medical evaluation of employee, including blood lead data
- o -- Proper selection of a respirator-the exposure monitoring and sampling drives this
- o -Training of EE's on the hazards of Lead exposure—with quiz and EE signature
- o -Training on proper use of Respirator-Cleaning, Repair, Field Checks, Limitations
- Fit Testing of Respirator= Quantitative or Qualitative
- Written schedule for filter changes

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# Written Hazard Communication Program, (OSHA CFR 1910.1200) the points to be reviewed should include:

- What are all the chemicals to be used
- What are the hazards of each
- O What are the major portals of entry-Inhalation, skin contact, ingestion
- What Personal Protective Equipment is needed to prevent exposure
- o Is there a permanent disability possible with the use of these chemicals
- Is there a quiz, answer sheet or other hard copy form showing that the EE acknowledges the training received.
- o Has the MSDS been reviewed with the EE and a record available of the review?

Daniel M. Dobrinen MSHS, CIH Lead Senior Industrial Hygienist Scientist 1 Jacobs Technology 228-688-1234



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A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Search OSHA

GO

TOUS

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

# RESPIRATIORY PROTECTION

Scope and Application

Frequently Asked Questions

Respirator Users

Medical Requirements

Maintenance

Fit Testing

Written Program

Voluntary Use Respirator Change

Schedules
Respirator Selection

## **Respirator Users**

Almost all elements of the respiratory protection program affect respirator users and their knowledge of the principles of respiratory protection is integral to an effective program. Elements that have a more direct impact on the user include knowledge of selection criteria, medical evaluations, procedures for proper use, fit-testing, and maintenance procedures. Proper selection and, if appropriate, fit testing of tight fitting face pieces will assure that the respirator will provide adequate protection against the contaminants that affect use. Medical evaluations are necessary to determine whether the user is fit to wear a respirator without adverse health effects. Training on procedures for proper use and maintenance will assure the wearer that the wearer is using the respirator in a safe and healthful manner.

#### References

- 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
  - 1910.134, Respiratory protection
    - 1910.134(d), Selection of respirators
    - 1910.134(e), Medical evaluation
    - 1910.134(f), Fit-testing
    - 1910.134(g), Use of respirators
    - 1910.134(h), Maintenance and care of respirators
    - 1910.134(i), Breathing air quality and use
    - 1910.134(k), Training and information
    - Appendix B-1, User seal check procedures (Mandatory)

Scope and Application | FAQ | Respirator Users | Medical Requirements | Maintenance Fit Testing | Written Program | Voluntary Use | Respirator Change Schedules Respirator Selection

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

Back to Top

www.osha.gov

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Page last updated: 09/28/2009



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www.OSHA.gov

A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Search OSHA

GO]

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

# Using the Manufacturer's Recommendation to Determine a Cartridge's Service Life

Chemical and respirator manufacturers may be able to provide an estimate based upon their own expertise and testing data.



Steps	Example
1. Obtain the following information: names of airborne contaminants  concentrations of those contaminants (in parts per million)  humidity in work area  work rate	Steve is the owner of an autobody shop, where the workers are exposed to paint vapors. The airborne chemical is Xylene. Steve determined through sampling that the amount of Xylene in the air doesn't exceed 400 ppm. The local weather conditions suggest an expected maximum of 55% relative humidity. Steve figures his painters and other helpers have a moderate breathing rate — their work is not as vigorous as shoveling snow.
2. Contact the manufacturer of the respirators you plan to use	Steve went to the Advisor page called " <u>List of Manufacturers</u> " where he located the address, fax number, and phone number of SafetyFirst, the makers of BreathEZ respirators. He phoned SafetyFirst and was directed to the Research Coordinator.
3. Provide the manufacturer with the following information:  name of the respirator model information from step 1	Steve explained to the coordinator that he had just purchased 5 new BreathEZ 450 Half Mask Respirators. He explained the situation and gave the necessary data. The coordinator said he would get back with Steve shortly.
4. Request the cartridge service life as well as the exact objective information they relied upon to project that service life.	When the coordinator called back with an estimated cartridge life recommendation of 190 minutes, Steve asked him to fax a report indicating the exact procedures and objective data that were used to derive the service life.
5. Create a written change schedule for the cartridges	Steve applied a safety factor to the manufacturer's suggested cartridge service life and had his employees change their cartridges every two hours. He included the report from SafetyFirst and his safety factor modification in his written respiratory protection program.



### Keep In Mind

- Manufacturers are likely to possess the most accurate data for their own respiratory products.
- However, the manufacturer may not have tested the respirator with the chemicals that you work with, and therefore may not be able to offer a reliable recommendation.

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Back to Top www.osha.gov www.dol.gov

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Privacy and Security Statement | Disclaimers

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Page last updated: 12/29/2008



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A-ZINdex: ABCDEFGHIJKLMNOPQRSTUVWXYZ

Search OSHA

ĞΟ]

T TOOL

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

# RESPIRATORY PROTECTION

Scope and Application

Frequently Asked Questions

Respirator Users

Medical Requirements

Maintenance

Fit Testing

Written Program

**Voluntary Use** 

Respirator Change Schedules

Respirator Selection

# **Respirator Change Schedules**



Did you know that employers are now required to provide a respirator cartridge change schedule?

See the <u>requirements</u> for change schedules.

Respirator cartridges don't last forever!

A change schedule is the part of the written respirator program which says how often cartridges should be replaced and what information was relied upon to make this judgment. A cartridge's useful service life is how long it provides adequate protection from harmful chemicals in the air. The service life of a cartridge depends upon many factors, including environmental conditions, breathing rate, cartridge filtering capacity, and the amount of contaminants in the air. It is suggested that employers apply a safety factor to the service life estimate to assure that the change schedule is a conservative estimate.

If you know what the chemical is and how much of it you are exposed to, then you are ready to estimate out how long your respirator cartridges will work and apply the safety factor.

### 3 valid ways for you to estimate a cartridge's service life

ROS	Can save money by providing a more accurate service life value instead of relying on conservative assumptions made by other methods
ROS	Most reliable method, especially for multiple contaminants
ROS	Can be used to validate an existing change schedule
ONS	Will likely take time and money to perform the tests

PROS	Can result in a more accurate estimate for your particular brand of respirator
PROS	Relies on the manufacturer's broad knowledge and expertise
CONS	May not be possible if the manufacturer is unable to provide a recommendation
CONS	May not account for all workplace and user factors adequately
1	Inexpensive and takes little time
PROS	Requires no math calculations if you use the Advisor Genius
CONS	Not as accurate as experimental testing. May result in a service life estimate that is shorter than it needs to be due to conservative assumptions



### Keep In Mind

- You may not rely on odor thresholds and other warning properties as the primary basis for determining the service life of gas and vapor cartridges and canisters.
- You should account for environmental and user factors and use a conservative approach when evaluating service life testing data.
- You should apply a safety factor to any estimate to account for uncertainty.
- Mixtures, intermittent use and concentrations, storage practices and other variables may require the use of an administrative time limit, e.g. one day, even though the estimated life would be longer.
- An example of a <u>decision logic tree</u> which could be used when evaluating a workplace for use of air purifying respirators is presented in these pages.
- There is a published "Rule of Thumb" that may provide a rough estimation of cartridge service life. However, you should NOT use this as the sole method of determining service life.

Scope and Application | FAQ | Respirator Users | Medical Requirements | Maintenance Fit Testing | Written Program | Voluntary Use | Respirator Change Schedules Respirator Selection

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

Back to Top

www.osha.gov

www.dol.gov

Contact Us | Freedom of Information Act | Customer Survey



OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

www.OSHA.gov

A-Z Index: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Search OSHA

[00]

7' 10 013

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

# RATORY PROT

Scope and Application

Frequently Asked Questions

Respirator Users

Medical Requirements

Maintenance Fit Testing

Written Program

**Voluntary Use** 

Respirator Change Schedules

Respirator Selection

## Written Program

The requirement for a respirator program to be in writing entails a great deal of preplanning of the implementation steps for the program. These steps include selection, medical fitness, maintenance, training, fit testing, use, program evaluation, etc. This pre-planning is by design and intended to ensure the respirator wearer is safely using the proper respirator. The program evaluation facet allows for continuous improvements or changes to be made, as necessary, to maintain a protective program.

#### References

- 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
  - 1910.134, Respiratory protection
    - 1910.134(c), Respiratory protection program
      - 1910.134(i), Program evaluation
      - 1910.134(m), Recordkeeping

Scope and Application | FAQ | Respirator Users | Medical Requirements | Maintenance Fit Testing | Written Program | Voluntary Use | Respirator Change Schedules Respirator Selection

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

Back to Top

www.osha.gov

www.dol.gov

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A-Z Index: A B C D E F G H I J K L M N O P O R S T U V W X Y Z

Search OSHA

[GO]

## --(°+1500

eTools Home: Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

# RESPIRATORY PROTECTION

Scope and Application

Frequently Asked Questions

Respirator Users

Medical Requirements

Maintenance

Fit Testing

Written Program

Voluntary Use

Respirator Change Schedules

Respirator Selection

### Site Map

- Scope and Application (Who Has to Use Respirators)
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(a), Permissible practice
- Respiratory Protection Frequently Asked Questions
- Respirator Users
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(d), Selection of respirators
      - 1910.134(e), Medical evaluation
      - 1910.134(f), Fit-testing
      - 1910.134(g), Use of respirators
      - 1910.134(h), Maintenance and care of respirators
      - 1910.134(i), Breathing air quality and use
      - 1910.134(k), Training and information
      - Appendix B-1 User seal check procedures (Mandatory)
- Medical Requirements
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(e), Medical evaluation
      - Appendix C, OSHA respirator medical evaluation questionnaire (Mandatory)
- Maintenance and Care of Respirators
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(h), Maintenance and care of respirators
      - Appendix B-2, Respirator cleaning procedures (Mandatory)
- Fit Testing
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(f), Fit testing
      - Appendix A, Fit testing procedures (Mandatory)

- Written Program
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(c), Respiratory protection program
      - 1910.134(i), Program evaluation
      - 1910.134(m), Recordkeeping
- Employee Voluntary Use of Respirators
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - 1910.134(c)(2), Where respirator use is not required
      - Appendix D, (Mandatory) Information for employees using respirators when not required under standard
- Respirator Change Schedules
  - OSHA Requirements for Change Schedules
    - 29 CFR 1910.134(d)(3)(iii)(B)(2). OSHA Standard.
    - Inspection procedures for the Respiratory Protection Standard.
       OSHA Directive.
    - Respiratory Protection. OSHA Preambles to Final Rules.
  - Factors that can Reduce Cartridge Service Life
  - Exposure Assessment
  - Safety Factors for Cartridge Service Life
  - Conducting Experimental Tests to Determine a Cartridge's Service Life
    - Evaluation of Respirator Change Schedules
  - Using the Manufacturer's Recommendation to Determine a Cartridge's Service Life
    - List of Manufacturers
      - <u>Certified Equipment List</u>. National Institute for Occupational Safety (NIOSH) and the National Personal Protective Technology Laboratory (NPPTL).
  - Using a Math Model Table to Determine a Cartridge's Service Life
    - The Gerry O. Wood Mathematical Model
      - The Advisor Genius: Calculating the Wood Equation
        - Downloadable Microsoft Windows program
        - Begin
      - Comparing Predicted Calculation with Experimental Data
    - The Wood Math Model Table
      - The Gerry O. Wood math model
        - The Advisor Genius: Calculating the Wood Equation
          - Downloadable Microsoft Windows program
          - Begin
        - Comparing Predicted Calculation with Experimental Data
      - Factors that can Reduce Cartridge Service Life
    - The Advisor Genius: Calculating the Wood Equation
      - Downloadable Microsoft Windows program
      - Begin

- The Yoon-Nelson Mathematical Model
  - Comparing Predicted Calculation with Experimental Data
- Respirator Change-out Schedules (continued). OSHA Safety and Health Topics Page. Example of a decision logic tree.
- Rule of Thumb
- Respirator Selection
  - The Advisor Genius: Selecting an Appropriate Respirator
    - Begin
  - **■** Exposure Assessment
  - Factors That Can Influence Respirator Selection
  - Assigned Protection Factors
  - Air-Purifying vs. Atmosphere-Supplying Respirators
    - Three Kinds of Air-Purifying Respirators.
      - Selection Criteria for Particulate Filters
        - 29 CFR 1910 Subpart I, Personal protective equipment.
           OSHA Standard.
          - 1910.134, Respiratory protection
            - 1910.134(d)(3)(iv). OSHA standard requirements for Particulate Respirator Selection.
        - NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84. US Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 96-101, (1996, January). The Table of Contents to this document provides links to the corresponding sections by title.
        - NIOSH Respirator User Notice. National Institute for Occupational Safety and Health (NIOSH), (1997, May 2). NIOSH service time recommendations for P-Series Particulate Respirators.
      - Respirator Change Schedules
  - Three Kinds of Atmosphere-Supplying Respirators
    - 29 CFR 1910.134(i). OSHA Standard.
- Exposure Control Priority
- Disclaimer
- Regulation and Additional Documents
  - 29 CFR 1910 Subpart I, Personal protective equipment. OSHA Standard.
    - 1910.134, Respiratory protection
      - Appendix A, Fit testing procedures (Mandatory)
      - Appendix B-1, User seal check procedures (Mandatory)
      - Appendix B-2, Respirator cleaning procedures (Mandatory)
      - Appendix C, OSHA respirator medical evaluation questionnaire (Mandatory)
      - Appendix D, (Mandatory) Information for employees using respirators when not required under the standard
  - Respiratory Protection Program Guidelines. OSHA Directive CPL 02-02-054 [CPL 2-2.54A], (2000, July 14). Sets forth guidelines for establishing and implementing an OSHA respirator program to ensure that all OSHA

- employees are protected from exposure to respiratory hazards.
- Inspection procedures for the Respiratory Protection Standard. OSHA Directive CPL 02-00-120 [CPL 2-0.120], (1998, September 25). Establishes agency interpretations and enforcement policies, and provides instructions to ensure uniform enforcement of the Respiratory Protection Standard (29 CFR 1910.134).
- 29 CFR 1910.134(e)(5)-- Respirator Fit-Testing. OSHA Directive CPL 02-02-29 [CPL 2-2.29], (1980, October 27). Provides guidance regarding enforcement policy for the respirator fit-testing requirement under 29 CFR 1910.134(e)(5).
- Major Requirements of OSHA's Respiratory Protection Standard 29 CFR 1910.134. OSHA, (2006, December). Discusses the major requirements of OSHA's respiratory protection standard.
- Respiratory Protection: Frequently Asked Questions. OSHA, (2004, November). Contains frequently asked questions and answers concerning respirators.
- Small Entity Compliance Guide for the Respiratory Protection Standard (CFR 1910.134). OSHA Publication 9071, (1999). Also available as a 706 KB PDF, 149 pages. Helps small businesses comply with the Respiratory Protection Standard. A sample respiratory protection program is included Appendix IV.
  - Questions and Answers on the Respiratory Protection Standard.
     (1998, August 3), 242 KB PDF\*, 82 pages. Provides questions and answers relating to each paragraph of the Respiratory Protection Standard. A Spanish translation of the Medical Questionnaire (Appendix C) is included at the end of the document.
- Protect Yourself --- Respirators. OSHA Quick Card 3280-10N-05, (2005).
   Also available as a 30 KB PDF, 1 page.
- Respiratory Protection. OSHA Publication 3079, (2002). Also available as a 279 KB PDF, 42 pages. Provides a generic, non-exhaustive overview of a particular standards related topic.
- Guide for Selection and Use of Personal Protective Equipment & Special Clothing for Foundry Operators. OSHA and American Foundry Society (AFS) Safety and Health Committee (10Q), (2005), 914 KB PDF, 29 pages. Describes special considerations for the selection and use of personal protective equipment and special clothing for work situations in metal melting and pouring operations that present a risk of exposure to foundry hazards. Developed by the American Foundry Society's (AFS) Safety and Health Committee (10Q) and is a product of the OSHA and AFS Alliance.
- Respirators. National Institute for Occupational Safety and Health (NIOSH) Safety and Health Topic and the National Personal Protective Technology Library (NPPTL). Provides a list of links to topics pertaining to respirators.
  - NIOSH Guide to Industrial Respiratory Protection. US Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 87-116, (1987, September). Also available as a 11 MB PDF, 305 pages. Covers types of respirators, guidance for selection and use, and user notices.
  - NIOSH Guide to the Selection and Use of Particulate Respirators
    Certified Under 42 CFR 84. US Department of Health and Human
    Services (DHHS), National Institute for Occupational Safety and
    Health (NIOSH), Publication No. 96-101, (1996, January). Explains
    the federal regulation for certifying air-purifying particulate
    respirators [42 CFR Part 84] and provides valuable information for
    selecting and using respirators certified by NIOSH.
  - NIOSH Respirator User Notice. National Institute for Occupational Safety and Health (NIOSH), (1997, May 2). Provides user notices (a written notice provided to inform users of a condition or risk that may exist with a NIOSH-certified product).

- Definitions
- Bibliography
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- Credits

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Scope and Application | FAQ | Respirator Users | Medical Requirements | Maintenance Fit Testing | Written Program | Voluntary Use | Respirator Change Schedules Respirator Selection

eTools Home : Resp. Protection

Reg & Docs | Definitions | Bibliography | Site Map | Viewing / Printing Inst. | Credits

Back to Top

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Page last updated: 09/25/2009

GO

#### <u> SafetyWorks :: Creating a Safe and Healthy Workplace :: Sample Programs</u>

#### Respirator Program

#### Sample Written Program

**REGULATORY BACKGROUND:** 29 CFR §1910.134 applies to all respirator use in general industry and construction workplaces. The standard applies when (1) employees are required to wear respirators to protect themselves from exposure to air contaminants above a specific exposure limit, (2) if the employer requires respirators to be worn, or (3) if respirators are otherwise necessary to protect employee health. Additionally, limited requirements apply when employees, for personal, comfort, or other reasons, voluntarily choose to wear certain kinds of Air-Purifying Respirators (APR). The standard affirms OSHA's long-standing policy that personal protective equipment -- in this instance, respirators -- be the last line of defense when engineering and work practice controls are inadequate to reduce employee exposure, or during the development and installation of other controls.

Among other requirements, the standard mandates that employers:

- Develop a written program;
- Assign a program administrator;
- Prepare work site-specific procedures;
- Select respirators based on the hazard(s) and the required protection;
- Train employees on the usage, fit, maintenance, cleaning, and storage of respirators;
- Fit test employees who will use any respirator with negative or positive pressure tight-fitting face piece, prior to first use and annually thereafter;
- Provide medical evaluation to determine employee ability to wear the selected respirator via (1) medical examination or (2) confidential questionnaire and, (3) when required by the responses to the questionnaire, a follow-up medical examination;
- Provide the tools and replacement parts necessary for respirator cleaning, maintenance, and repair; and
- Perform periodic program evaluation to ensure effectiveness.

A major change in the standard is the provision governing when APR may be used. In the past, OSHA and the National Institute for Occupational Safety and Health (NIOSH) both prohibited the use of APR against gases and vapors that had inadequate warning properties —
principally when the odor threshold was above the applicable exposure limit. The new standard
permits the use of APR without limit, if the employer has objective data (1) that APR provide adequate protection, and (2) on the service life of the cartridges, upon which a cartridge change out schedule may be based.

### TABLE OF CONTENTS

- I. Purpose
- II. Scope and Application
- III. Responsibilities
  - A. Program Administrator
  - B. Responsibilities of Supervisors
  - C. Employees
- IV. Program Elements
  - A. Selection Procedures
  - B. Medical Evaluation
  - C. Fit Testing
  - D. Respirator Usage
  - E. Respirator Malfunction
  - F. Air Quality
  - G. Cleaning, Maintenance, and Storage
  - H. Cartridge & Canister Change Out Schedules
  - I. Training
- V. Program Evaluation
- VI. Documentation and Recordkeeping
- VII. Index of Attachments

The purpose of this program is to ensure that all employees of (Name of Business) are protected from exposure to respiratory hazards and that (Name of Business) is in compliance with 29 CFR\$1910.134(c). Engineering controls, such as ventilation and substitution of less toxic materials, are used where feasible; however, engineering controls are not always completely effective in controlling the identified airborne hazards. In these situations, respirators, and other types of personal protective equipment must be used. Respirators are also needed to protect your health during emergencies. The work tasks requiring respirator use are outlined in Table 1 in the Scope and Application section of this program. All employees performing the tasks for the periods or under the conditions specified in the table must wear the designated equipment, or one providing greater or equivalent protection, as a condition of continued employment. It is (Name of Business)'s policy that use of PPE, including respirators, will be enforced, and failure to comply may result in disciplinary action, up to and including termination for serious or repeated infractions.

In addition, if an employee desires to wear respirators during certain operations that do not involve exposures to airborne contaminants requiring respiratory protection, as a general policy, each such request will be reviewed on a case-by-case situation. If the use of respiratory protection in a specific case will not jeopardize an employee's health or safety, or that of coworkers, an employee may use the respirators provided or may provide his/her own for voluntary use, subject to approval by the Program administrator. As outlined in the Voluntary Usage section of this program, voluntary usage is subject to certain additional program requirements.

### II. Scope and Application

(Name of Business) has determined that some employees are exposed to respiratory hazards during routine operations. This program applies to all employees who are required to wear respirators during normal work operations, and during some non-routine or emergency operations such as clean-up of spills of hazardous substances. All employees working in these areas and engaged in certain processes or tasks found in Table 1 must be enrolled in the company's respiratory protection program. Employees participating in this program do so at no cost to them; the expense associated with training, medical evaluations and equipment are to be paid by the company. In addition, where any employee voluntarily wears a respirator when one is not required (i.e., a hazard assessment reviewed by the Program administrator revealed respirators are not required) the employer must implement the medical evaluation provisions of a program. reviewed by the Program administrator revealed respirators are not required), the employer must implement the medical evaluation provisions of a program, and is responsible for ensuring that employees comply with cleaning, maintenance, and proper storage of the respirators.

Dust masks (filtering facepiece) are not subject to even these minimal requirements. Voluntary use of dust masks alone does not require the employer to have a written program. For filtering facepiece respirator use, the employer needs only ensure that dust masks are not dirty or contaminated, that their use does not interfere with the employee's ability to work safely, and that a copy of Appendix D (Section VI, Attachments) is provided to each voluntary wearer.

### III. Responsibilities

### A. Program Administrator

The program administrator is responsible for administering the respiratory protection program. Duties include:

- -Identifying work areas, processes, or task that require workers to wear respirators, and evaluating the associated hazards.
- Selecting appropriate, approved respiratory protection options.
- -Monitoring respirator use to ensure that respirators are used in accordance with their certifications.
- -Arranging for and or conducting training.
- -Ensuring proper storage and maintenance of respiratory protection equipment.
  -Conducting qualitative fit testing.
  -Administering the medical surveillance program.

- Maintaining required program records
- -Evaluating the respiratory protection program.
- -Updating the written program, as necessary

The program administrator is (Name or Title of Program Administrator).

B. Responsibilities of Supervisors

Supervisors are responsible for ensuring that the respiratory protection program is implemented in their work areas. In addition to being knowledgeable about the program requirements for their own protection, supervisors must also ensure that the program is understood and followed by the employees under their charge. Supervisors are required to:

- -Ensure that employees under their supervision (including new hires) have received
- appropriate training, fit testing, and annual medical evaluation.

- Ensure the availability of appropriate respirators and accessories.

  Be aware of tasks requiring the use of respiratory protection.

  Enforce the proper use of respiratory protection.

  Ensure that respirators are properly cleaned, maintained, and stored in accordance with

-Monitor work areas and operations with sufficient frequency to identify respiratory

hazards and select proper equipment.

Coordinate with the program administrator on how to address respiratory hazards or other concerns regarding the program.

Each employee must wear his or her respirator when and where required and in the manner in

which they were trained. Employees also are required to:

-Be familiar with this program.

-Care for and maintain the respirators as instructed, and store in a clean sanitary location.

-Inform the supervisor if the respirator no longer fits well, and request a new one that fits

-Inform the supervisor or program administrator of any potential respiratory hazards or other concerns regarding the program.

### IV. Program Elements

The program administrator selects the respirators to be used, based on the hazards employees encounter and in accordance with all OSHA standards. (Name of Business) has performed an exposure assessment identifying the respiratory hazard(s) found in its workplace.

### **B.** Medical Evaluation

Employees who (1) are required to wear respirators, or (2) choose to wear an APR voluntarily, must pass a medical examination before being permitted to wear a respirator on the job. Employees are not permitted to wear respirators until they are medically

Employees refusing the medical evaluation are not permitted to work in an area requiring respirator use. The medical evaluation is conducted using the questionnaire provided in

Appendix C of the respiratory protection standard (Section VI, Attachments) or an actual examination that obtains the same information as contained in the questionnaire.

All employees requiring medical evaluations are provided a copy of the medical questionnaire as found in Appendix C of the standard (Section VI, Attachments).

Medical evaluation procedures are as follows:

- -All examinations and questionnaires are to remain confidential between the employee and the Physician or other Licensed Health Care Professional
- All affected employees are given a copy of the medical questionnaire to complete, along with a stamped, addressed envelope for mailing the completed document to the PLHCP.

  -The questionnaire is completed confidentially during the employee's usual work shift.

  -To the extent feasible, the company accommodates employees who are unable to read the
- questionnaire. Someone other than the employer, at the employee's request, may be asked to assist in reading the document. If this is not possible, the employee will be sent to the physician or other licensed health care professional (PLHCP) for a medical evaluation.
- -Follow-up medical exams are granted to employees as required by the standard, and/or as deemed necessary by the PLHCP.
- -All employees are provided the opportunity to speak with the PLHCP about their medical evaluation, if requested.
- -Any employee required, for medical reasons, to wear a Powered Air Purifying Respirator (PAPR) is provided a powered air purifying respirator.

After an employee has received approval and started to use a respirator, additional medical evaluation is provided if:

- 1) The employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing. 2) The PLHCP or supervisor informs the program administrator of a need for reevaluation.
- 3) Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation. 4) A change occurs in the workplace conditions that may result in an

increased physiological burden on the employee

A physician or other licensed health care professional (PLHCP) at (name of clinic, or name of Physician/PLHCP) evaluates the information found in Sections 1 and 2, Part A of Appendix C of the standard. The PLHCP, prior to making a determination for fitness of duty, is provided vital information for respirator usage. This includes the type and weight of the respirator, duration and frequency of use, expected work effort, additional personal protective clothing/equipment to be used, and estimated temperature and humidity encountered. If an employee responds positively to any of questions 1 through 8 in Section 2 of the questionnaire, or if the PLHCP upon initial review of the questionnaire deems it necessary, a follow-up medical examination is provided. This follow-up exam includes any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination for safe respirator usage.

### C. Fit Testing

Fit testing is required for employees wearing respirators with a negative or positive pressure tight-fitting facepiece. The fit test is conducted prior to the employee being required to use the respirator and uses the same make, model, style, and size of respirator to be used on the job. The company may use a qualitative fit test (QLFT) or a quantitative fit testing (QNFT) approach. Fit test forms may by found in Section VI, Attachments.

Fit testing is conducted:

- -Prior to initial use of the respirator.
- If a different respirator facepiece (size, style, model or make) is used.
- -On an annual basis
- -if the employee, employer, PLHCP, supervisor or program administrator makes a visual observation of changes in the employee's physical condition that would affect respirator fit. (This might include: facial scarring, dental changes, cosmetic surgery or a drastic change in weight.)
- -If an employee passes either test, but notifies the employer that the fit is unacceptable, the employee is allowed to select a different respirator and is retested.

### D. Respirator Usage

Employees use their respirators under conditions specified by this program, and in accordance with the training they receive on the use of each particular model. In addition, the respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer. Each time a respirator is put on, employees must conduct a positive and negative pressure user seal check. Additional personal protective equipment, combined with respirator use, may be necessary to adequately prevent exposure. Use of eye, face or skin protection may be required in certain processes.

Tight fitting facepiece respirators are not permitted for use if:

- -An employee has facial hair that interferes with the sealing surface of the respirator and the face, or interferes with the valve function
- -Corrective glasses/goggles or other personal protective equipment interferes with the seal of the facepiece
- -Any other condition interferes with the facepiece seal.

The employee must vacate the respirator use area:

- -To wash face and respirator facepieces as necessary to prevent respirator induced eye or skin irritation.
- -If vapor or gas breakthrough is detected.

-If there is a change in breathing resistance.

-If there is facepiece leakage.
-To replace the respirator or filter, cartridge, or canister elements.

If any of the above conditions are caused by a failure of the respirator or any of its components, or if cartridges or filters need to be changed, the company provides replacement parts or repairs the respirator prior to allowing the employee to return to the respirator use area.

Voluntary Usage of Respirators: At the request of employees, the company may provide respirators or permit employees to use their own respirators for voluntary use in areas where respirators are not mandatory. However, prior to the voluntary use of respirators and on a case-by-case basis, the program administrator first determines that the use of such a respirator does not, in itself create a hazard. Once this determination is established, employees voluntarily using respirators are issued a copy of "Information for Employees Using Respirators When Not Required Under the Standard," Appendix D of the standard as found in Section VI, Attachments.

In addition, employees voluntarily using tight-fitting respirators are governed by the medical surveillance, cleaning, storage and maintenance aspects of the respirator as outlined in the respiratory protection program. However, employees who voluntarily wear disposable filtering facepieces or those whose only respirator is an escape-only respirator are not subject to the medical evaluation provision of this program.

E. Respirator Malfunction

- 1. APR Respirator Malfunction: In the event of an APR malfunction (such as breakthrough, facepiece leakage, or improperly working valve), the employee should inform the supervisor that the respirator is no longer functioning as intended, leave the respirator use area and repair or replace the defective respirator. The supervisor is responsible for ensuring that the employee receives the necessary parts for repair or a new functional respirator.
- 2. Atmosphere-supplying Respirator (SAR) Malfunction: Usually employees using atmosphere-supplying respirators work in pairs. If one worker is experiencing a SAR malfunction, by using hand signals, he or she notifies the partner of the problem. The partner then escorts the employee with SAR malfunction outside the respirator use area to assess and rectify the malfunction.

F. Air Quality

Supplied-air respirators use only Grade D breathing air as described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989 meeting the following specifications:

-Oxygen content (v/v) of 19.5-23.5%

- -Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less -Carbon monoxide content of 10 ppm or less
- -Carbon dioxide content of 1000 ppm or less

-Lack of noticeable odor

The program administrator maintains a certificate of analysis from the supplier that (1) Grade D breathing air is contained in the cylinders used to supply breathing air; (2) cylinders are tested and maintained as required in the Shipping Container Specification Regulations of the Department of Transportation; and (3) the moisture content in the cylinder does not exceed a dew point of -50 degrees Fahrenheit at 1 atmosphere pressure.

Compressors used to provide breathing air to respirators shall be constructed and situated so as to

-Prevent entry of contaminated air into the air supply system

-Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F below the ambient temperature

-Have suitable in-line air purifying sorbent beds and filter to further ensure breathing air quality. Sorbent beds and filters shall be maintained and replaced or refurbished periodically following manufacturer's instructions

- -Have a tag containing the most recent change date and the signature of the person authorized to perform the change
  -For compressors that are not oil-lubricated, the employer shall ensure that carbon monoxide levels in the breathing air do not exceed 10 parts per million (ppm). -For oil-lubricated compressors, a high temperature alarm or carbon monoxide alarm, or both, shall be used to monitor carbon monoxide levels -Breathing air couplings must be incompatible with outlets for nonrespirable worksite air or other gas systems.

G. Cleaning, Maintenance, and Storage

Respirators are to be regularly cleaned and disinfected in accordance with the manufacturers instructions. APR are to be cleaned and disinfected as often as necessary, but at least every day used or as outlined in 29 CFR §1910.134(h)(1) of the standard. SAR and emergency use respirators are to be cleaned and disinfected after each use.

The following procedure is to be used for cleaning and disinfecting, unless the manufacturer directs otherwise:

Disassemble respirator, removing all filters, canisters, or cartridges.

-Wash the facepiece and associated parts in a mild detergent with warm water. Do not use organic solvents or bleach.

Rinse completely in clean, warm water.

- Wipe the respirator with disinfectant wipes (70% isopropyl alcohol) to kill germs. -Air dry in a clean area. If a clean area is not available, use clean disposable paper towels to blot excess moisture.
- -Reassemble the respirator and replace any defective parts (noting the condition of the

head straps and valve flaps.)
-Place in a clean, dry plastic bag or other air tight container.

Note: The program administrator ensures an adequate supply of the appropriate cleaning and disinfection supplies. If supplies are low, employees should notify the supervisor or program administrator.

Respirators are to be properly maintained at all times in order to ensure that they function properly and can adequately provide protection to the employee. Maintenance involves a thorough visual inspection for cleanliness and/or defects. Worn or deteriorated parts must be replaced prior to use. No components are replaced or repairs made beyond those recommended by the manufacturer. Regulator or alarm repair of atmosphere-supplying respirators are conducted by the manufacturer.

The following list is used when inspecting respirators:

Facepiece: cracks, tears, or holes, facemask distortion, cracked or loose lenses/face shield Head straps: breaks or tears, broken buckles/clasps, overstretched elastic bands Valves: residue or dirt, cracks or tears in valve material, absence of valve flap

Filter/Cartridges: proper cartridge for hazard, approval designation, intact gaskets, cracks or dents in housing Air Supply Systems: breathing air quality/grade, condition of supply hoses, hose connections, settings on regulators and valves

Respirators that are defective or have defective parts are taken out of service immediately. If an employee discovers a defect in a respirator during an inspection, the employee shall bring the defect to the attention of the supervisor. Supervisors give all defective respirators to the program administrator or the person responsible for replacement or repair.

The appropriate person then decides whether to:

- -Temporarily take the respirator out of service until it can be repaired;
- -Repair the respirator; or
- -Dispose of the respirator due to a defect or irreparable problem.
- -Employees are permitted to leave their work area to perform limited maintenance on their respirator in an area that is free from respiratory hazards. Situations when this is permitted include: face or respirator washing to prevent skin/eye irritation; respirator in an area that is free from respiratory hazards. Situations when this is permitted include: face or respirator washing to prevent skin/eye irritation; replacement of filter, cartridge or canister; leakage is detected in the facepiece; vapor or gas breakthrough is detected; or detection of any damage to the

Note: When a respirator is taken out of service, it is tagged as such to prevent accidental use of a malfunctioning device. All defective respirators are stored separately from functional respirators.

APR are stored in a clean, dry area and in accordance with the manufacturer's recommendations. Each employee cleans and inspects their own respirator in accordance with the provisions of this program and stores their respirator in a plastic bag or air tight container. Each employee has his or her name on the bag/container and only stores his or her own respirator in that container. Atmosphere supplying respirators will be stored in (insert name of area or location). A supply of respirators and replacement components will be stored in the original manufacturer's packaging in the (insert name of area or location).

H. Cartridge & Canister Change Out Schedules

For atmospheres that are not Immediately Dangerous to Life and Health (IDLH), (Name of Business) shall provide a respirator adequate to protect the health of the employee and ensure compliance with OSHA requirements under routine and reasonably foreseeable emergency situations. The respirator selected by the Program Administrator shall be appropriate for the chemical state and physical form of the contaminant. See Table 1 in Section VII, Attachments.

The use of APRs requires that the respirator be equipped with an **End of Service Life Indicator (ESLI)** certified by NIOSH for the contaminant or if there is no ESLI appropriate for conditions in the workplace, (*Name of Business*) shall implement a change schedule based on objective information that ensures that canisters and cartridges are changed before the end of their service life. The information and data relied upon and the basis for the canister and cartridge change out schedule are included in Section VII, Attachments.

I. Training

The program administrator provides training to respirator users and their supervisors on the one program administrator provides training to respirator users and their supervisors on the contents of this respiratory protection program, their responsibilities under it, and the OSHA respiratory protection standard, 29 CFR1910.134. Employees are trained prior to using respirators in the workplace. Supervisors are trained prior to using a respirator in the workplace or prior to supervising employees required to use respirators.

The training program covers the following topics:

- -The company respiratory protection program.
  -The OSHA respiratory protection standard.
  -The respiratory hazards encountered at the worksite.
- -The proper selection and use of respirators.
  -Additional personal protective equipment.
  -Respirator limitations.
- -How to put-on and perform user seal (fit) checks.
- -Fit testing.
- -Ermergency use procedures.
- -Maintenance and storage.
- Medical signs and symptoms limiting the effective use of respirators.

Employees are retrained annually, or as needed (i.e. relocation to another department using a different type of respirator). Employees are required to demonstrate their understanding of the topics covered in the training through hands-on exercises and a written quiz. Respirator training the demonstrate with a program administrator. The decumentation includes the type model and is documented by the program administrator. The documentation includes the type, model, and size of respirator for which each employee has been trained and fit tested.

### V. Program Evaluation

The program administer and other responsible supervisors conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented. The evaluations in clude regular consultations with employees who use respirators and their supervisors for re-commendations of improvement or problematic issues. Records reviews, site inspections and periodic air monitoring also assist in program review.

### VI. Documentation and Recordkeeping

A written copy of this program and the OSHA standard is maintained by the program acliministrator and is available to any employee interested in reviewing the document.

Training and fit testing records are also maintained by the program administrator. These records are updated as new employees are trained, when existing employees receive refresher training a.md/or new fit testing is conducted.

Medical evaluations are maintained in accordance with the OSHA medical records standard 29 CFR1910.1020. However, the PLHCP's written recommendation regarding the employee's a bility to use a respirator are maintained by the program administrator.

# VII. Attachments

Respirator Fit Test Form -14-

Rainbow Passage -15-

Appendix C to the OSHA Respirator Standard (29 CFR 1910.134): Respirator Medical Evaluation Questionnaire (Mandatory) -16-

Appendix D to the OSHA Respirator Standard (29 CFR 1910.134): Information for Employees Using Respirators When Not Required Under the Standard (Non-Mandatory) -22-

Attach Documentation of Change Out Schedule Here

1. Today's date:
2. Your name:
3. Your age (to nearest year):
4. Sex (circle one): Male/Female

Qualitative Respirator Fit Test Form (QLFT)		
Imployee:		
Company:		
Date:		
	Respirator Type:	
Respirator Size :	Cartridge(s):	
PRIOR TO FIT TESTING:	2. Link and a ship had that the	
employee is able to detect the fit test different type test must be administe	correct size respirator and shown how to assemble, don, doff and adjust the respirator. Once it has been established that the challenge agent (isoamyl actate), the test may be administered. If the subject is unable to detect the challenge agent, a red. Contact an industrial hygienist or the respirator vendor for assistance.	
To assess proper comfort and fit, the	respirator must be worn for at least five minutes, while allowing the subject to determine the following:  Room to talk	
Chin properly placed Positioning of mask	Koom to tauk Tendency to slip	
Strap tension	Cheeks filled out	
Fit across nose bridge	Self observation in mirror Room for safety glasses	
Distance from nose to chin	Room for safety glasses	
Positive and negative pressure test		
TEST: One minute each		
( ) Breathe normally	() Talking (Rainbow Passage, nest page)	
( ) Breathe deeply (	) Jogging in place	
( ) Turn head from side to side	() Breathe normally	
()Nod head up and down		
( ) PASS ( ) FAIL		
Comments:	Date:	
Employee Signature:	Date:	
	Rainbow Passage	
When the sunlight strikes raindrop. These take the shape of a long roun of gold at one end. People look, but end of the rainbow.	s in the air, they act like a prism and form a rainbow. The rainbow is a division of the white light into many beautiful colors. d arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot no one ever finds it. When a man looks for something beyond its reach, his friends say he is looking for the pot of gold at the	
	ndix C to 1910.134: OSHA Respirator Medical Evaluation Questionnaire (Mandatory)	
To the employer: Answers to que	estions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.	
To the employee: Can you read (circle one): Yes/No		
confidentiality, your employer or s to the health care professional who	nswer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your upervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire will review it.	
Part A. Section 1. (Mandatory) The	following information must be provided by every employee who has been selected to use any type of respirator (please print).	

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5. Your height: _
                           __ ft. _
6. Your weight:
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):
9. The best time to phone you at this number:
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11. Check the type of respirator you will use (you can check more than one category):
 a. _____N, R, or P disposable respirator (filter-mask, non-cartridge type only).
           Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): Yes/No
If "yes," what type(s):
Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please
1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No
2. Have you ever had any of the following conditions?
a. Seizures (fits): Yes/No
 b. Diabetes (sugar disease): Yes/No
 c. Allergic reactions that interfere with your breathing: Yes/No
 d. Claustrophobia (fear of closed-in places): Yes/No
e. Trouble smelling odors: Yes/No
3. Have you ever had any of the following pulmonary or lung problems?
 a. Asbestosis: Yes/No
 b. Asthma: Yes/No
 c. Chronic bronchitis: Yes/No
d. Emphysema: Yes/No
 e. Pneumonia: Yes/No
 f. Tuberculosis: Yes/No
g. Silicosis: Yes/No
  h. Pneumothorax (collapsed lung): Yes/No
 i. Lung cancer: Yes/No
 j. Broken ribs: Yes/No
  k. Any chest injuries or surgeries: Yes/No
 1. Any other lung problem that you've been told about: Yes/No
 4. Do you currently have any of the following symptoms of pulmonary or lung illness?
 a. Shortness of breath: Yes/No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No
d. Have to stop for breath when walking at your own pace on level ground: Yes/No
e. Shortness of breath when washing or dressing yourself: Yes/No
f. Shortness of breath that interferes with your job: Yes/No
 r. Snorthess of breath that interferes with your job. Yes/No
g. Coughing that produces phlegm (thick sputum): Yes/No
h. Coughing that wakes you early in the morning: Yes/No
i. Coughing that occurs mostly when you are lying down: Yes/No
j. Coughing up blood in the last month: Yes/No
  k. Wheezing: Yes/No
  l. Wheezing that interferes with your job: Yes/No
m. Chest pain when you breathe deeply: Yes/No
  n. Any other symptoms that you think may be related to lung problems: Yes/No
5. Have you ever had any of the following cardiovascular or heart problems?

a. Heart attack: Yes/No
  b. Stroke: Yes/No
  c. Angina: Yes/No
  d. Heart failure: Yes/No
  e. Swelling in your legs or feet (not caused by walking): Yes/No
f. Heart arrhythmia (heart beating irregularly): Yes/No
 g. High blood pressure: Yes/No
h. Any other heart problem that you've been told about: Yes/No
6. Have you ever had any of the following cardiovascular or heart symptoms?
   a. Frequent pain or tightness in your chest: Yes/No
  b. Pain or tightness in your chest during physical activity: Yes/No c. Pain or tightness in your chest that interferes with your job: Yes/No
  d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
  e. Heartburn or indigestion that is not related to eating: Yes/No
  f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No
 7. Do you currently take medication for any of the following problems?
a. Breathing or lung problems: Yes/No
  b. Heart trouble: Yes/No
   c. Blood pressure: Yes/No
   d. Seizures (fits): Yes/No
 8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, check the following space and go to question
 9:)
   a. Eye irritation: Yes/No

    b. Skin allergies or rashes: Yes/No
    c. Anxiety: Yes/No

   d. General weakness or fatigue: Yes/No
   e. Any other problem that interferes with your use of a respirator: Yes/No
 9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: Yes/No
 Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing
 apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.
 10. Have you ever lost vision in either eye (temporarily or permanently): Yes/No
  11. Do you currently have any of the following vision problems?
   a. Wear contact lenses: Yes/No
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b. Wear glasses: Yes/No
c. Color blind: Yes/No d. Any other eye or vision problem: Yes/No
12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No
13. Do you currently have any of the following hearing problems?
a. Difficulty hearing: Yes/No b. Wear a hearing aid: Yes/No
c. Any other hearing or ear problem: Yes/No
14. Have you ever had a back injury: Yes/No 15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet: Yes/No
b. Back pain: Yes/No
c. Difficulty fully moving your arms and legs: Yes/No
d. Pain or stiffness when you lean forward or backward at the waist: Yes/No e. Difficulty fully moving your head up or down: Yes/No
f. Difficulty fully moving your head side to side: Yes/No
g. Difficulty bending at your knees: Yes/No
h. Difficulty squatting to the ground: Yes/No i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No
Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will
review the questionnaire.
1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms were you're working under these conditions: Yes/No If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms of your expressions (or given you can be you can be into skin a characteristic for the property of t
it 'yes, do you have reeining of dizziness, shortness of breath, pointing in your class, of other symptoms of the symptoms of dizziness, shortness of breath, and the symptoms of dizziness
If "yes," name the chemicals if you know them:
3. Have you ever worked with any of the materials, or under any of the conditions, listed below:
a. Asbestos: Yes/No
b. Silica (e.g., in sandblasting): Yes/No c. Tungsten/cobalt (e.g., grinding or welding this material): Yes/No
c. 1 ungsten coosat (e.g., grinding of weating this material). 163/300 d. Beryllium; Yes/No
e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No g. Iron: Yes/No
g. Holl. Pes/No h. Tin, Yes/No
i. Dusty environments: Yes/No
j. Any other hazardous exposures: Yes/No If "yes," describe these exposures:
4. List any second jobs or side businesses you have:
5. List your previous occupations:
6. List your current and previous hobbies:
7. Have you been in the military services? Yes/No
If "yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No
8. Have you ever worked on a HAZMAT team? Yes/No 9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking
any other medications for any reason (including over-the-counter medications): Yes/No
If "yes," name the medications if you know them:
10. Will you be using any of the following items with your respirator(s)?
a. HEPA Filters: Yes/No b. Canisters (for example, gas masks): Yes/No
c Cartridges Ves/No
11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:
a. Escape only (no rescue): Yes/No b. Emergency rescue only: Yes/No
c. Less than 5 hours per week: Yes/No
d. Less than 2 hours per day: Yes/No
e. 2 to 4 hours per day: Yes/No f. Over 4 hours per day: Yes/No
12. During the period you are using the respirator(s), is your work effort:
a Light (less than 200 kcal per hour); Yes/No
If "yes," how long does this period last during the average shift:mins.  Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or
controlling machines.
h. Moderate (200 to 350 kcal per hour): Yes/NO
If "yes," how long does this period last during the average shift: hrs. mins.  Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly
work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a
wheelbarrow with a heavy load (about 100 lbs.) on a level surface.
c. Heavy (above 350 kcal per hour): Yes/No
If "yes," how long does this period last during the average shift:mins.  Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while
bricklaving or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).
13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: Yes/No
If "yes," describe this protective clothing and/or equipment:
14. Will you be working under hot conditions (temperature exceeding 77° F): Yes/No
15. Will you be working under humid conditions; Yes/No
16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s): Name of the first toxic substance: Estimated maximum exposure level per shift: Duration of exposure per shift Name of the second toxic substance: Estimated maximum exposure level per shift: Duration of exposure per shift: Name of the third toxic substance: Estimated maximum exposure level per shift: Duration of exposure per shift:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

# Appendix D to 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

- 1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
- 2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
- 3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
- 4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

The name of any other toxic substances that you'll be exposed to while using your respirator:

[Source: 63 FR 1152, January 08, 1998; 63 FR 20098, April 23, 1998]

